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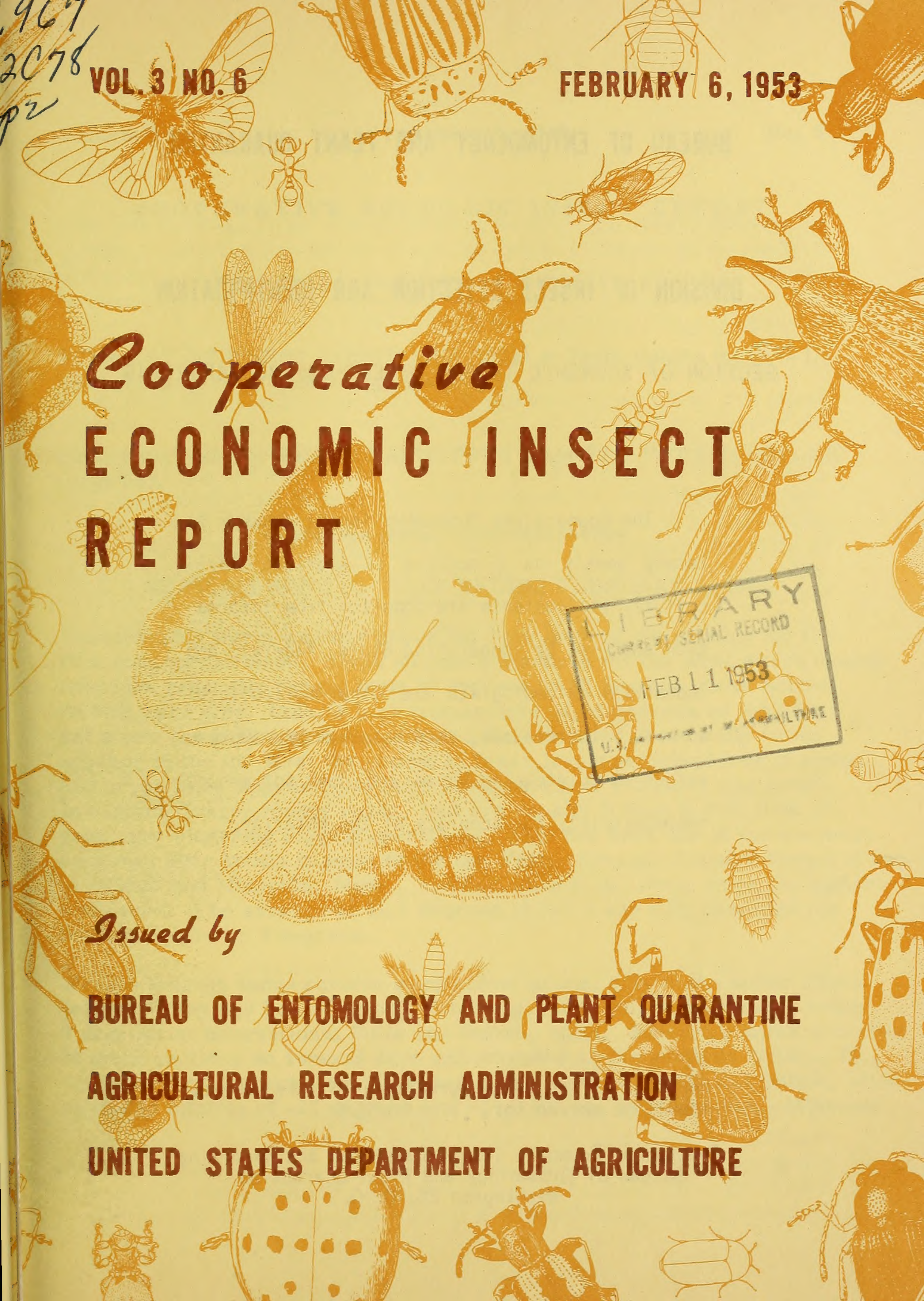

Cooperative ECONOMIC INSECT REPORT

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DIVISION OF INSECT DETECTION AND IDENTIFICATION

SECTION OF ECONOMIC INSECT DETECTION AND REPORTING

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Bureau serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 3 February 6, 1953 No. 6

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

SUMMARY OF INSECT CONDITIONS (1952) in South Dakota (page 78), Georgia (page 80), Mississippi (page 83).

Survey methods for BEET LEAFHOPPER (page 89), POTATO PSYLLID (page 90).

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WEATHER FOR THE WEEK ENDING FEBRUARY 3, 1953

Unseasonably warm weather prevailed over most of the country for the fifth consecutive week. It was unusually warm in the far West where weekly averages generally ranged from 10 degrees to 20 degrees above normal. At Salt Lake City, Utah, a high temperature of 54 degrees on the 29th set a new record for that day. Due to the continued abnormally warm weather in the far West the ground at lower levels remained free of snow, and crops were improving in most sections where moisture was ample. In eastern Oregon muddy roads, that are usually frozen at this time of year, are hindering logging operations. This has been one of the warmest Januarys ever known in most of the far West. Average January temperatures at Helena and Missoula, Mont., and Salt Lake City, Utah, were the highest on record. The average of 41.2 degrees at Salt Lake City exceeded the former record by 3 degrees.

Weekly average temperatures were below normal only in the upper Mississippi Valley and Lake Region, with the greatest minus departures being 7 degrees at International Falls and Duluth, Minn. Subzero minima occurred in these sections on several days and extended as far south as Moline, Ill., on the 29th of January. On February 1, International Falls and Duluth, Minn., recorded minima of -33 degrees and -24 degrees, respectively. Minimum temperatures also fell to zero in extreme northern New York and New England on January 27 and 30, and again on February 2 when Caribou, Maine, registered -13 degrees. Moderate freezes occurred in northern and central Texas on the 28th, and almost to the Gulf in States east of the Mississippi on the 29th and 30th.

Precipitation was generally below normal, except along the north Pacific Coast and in the lower portions of the Ohio and Mississippi Valleys. From the western portions of the Great Plains to the Pacific Coast precipitation was generally limited to the Pacific Northwest where frequent rains that totaled from 1 to 8 inches along the Coast diminished inland to a few hundredths along the Continental Divide. East of the Mississippi, general precipitation that occurred on January 28 and 30 totaled from one-fourth to three-fourths inch. At the end of the period moderate to heavy rains fell in Florida and along the Southeastern Coast, and moderate to heavy snowfall occurred in the upper Mississippi Valley as far south as Iowa, in the Lake Region, New York, and New England. (Summary Supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

LUPINE MAGGOT (Hylemya lupini) - FLORIDA - Recent warm weather apparently causing adults to emerge in the Gadsden County area. (F.E. Guthrie).

BLISTER BEETLES (Epicauta spp.) - TENNESSEE - Two small infestations have emerged. Attacking orchard grass in Campbell County and oats in Hawkins County. (R. P. Mullett).

LYGUS BUGS- UTAH - Lygus elisus and L. hespeerus numerous in leaf litter in Cache County. (G. F. Knowlton).

TRUCK CROP INSECTS

APHIDS (Aphidae) - FLORIDA - Turnip aphid(Rhopalosiphum pseudobrassicae) heavy on turnips and Chinese cabbage; cabbage aphid (Brevicoryne brassicae) heavy on cabbage and collards in Gadsden County and adjacent areas. (L. M. May). Cabbage aphid abundant enough on cole crops to require insecticidal treatment in Orange County. (R. E. Campbell).

EUROPEAN RED MITE (Metetranychus ulmi) - WASHINGTON - Large number of eggs on raspberry canes in some plantings at Sumner. (C. F. Doucette).

MOLE CRICKETS - FLORIDA - Light infestations in tobacco seedbeds in Gadsden County and adjacent areas. (L. M. May).

Truck Crop Pest Situation in Southern California

TWO-SPOTTED SPIDER MITE (Tetranychus bimaculatus) is building up to injurious numbers on strawberries in Orange County. Some growers have applied control measures. STRAWBERRY APHID (Capitophorus fragaefolii) is also increasing on strawberries but not yet heavy enough to require insecticidal treatment. CORN EARWORM (Heliothis armigera) Damaging newly emerging cauliflower plants in Los Angeles County. CABBAGE LOOPER (Trichoplusia ni) Damaging some fields of cabbage in Orange County, but populations not large. PEPPER WEEVIL (Anthonomus eugenii) is unusually numerous on black nightshade (Solanum nigrum) in the San Luis Rey Valley of San Diego County. Weevil infestations in pepper fields have usually been early and extensive when winter survival on nightshade has been high. GREEN SNAIL (Helix aperta) Observed damaging a young cabbage field at San Ysidro. The first few rows next to a pasture were destroyed and damage extended for several rows into the field. From one to eight snails were observed per plant. This snail was first discovered at San Ysidro in April 1941 and has since been under quarantine. (R. E. Campbell).

COTTON INSECTS

NAVEL ORANGEWORM (Myelois venipars) - CALIFORNIA - Larvae found in green cotton bolls December 15, 1952. One specimen collected from cotton in Kern County and two from cotton in Fresno County. (H. M. Armitage). According to available files, this is the first record of this insect attacking cotton, although it is a widely distributed general feeder. This report is of interest and other similar records should be reported; however, it is questionable that this insect will become a serious pest of cotton. (R. W. Harned).

Notes from Literature on Cotton Stem Moth

Since the announcement of the finding of cotton stem moth (Platyedra vilella) in hollyhock in Mineola, N. Y. (C. E. I. R., Vol. 2, No. 32, p. 414), several inquiries have been made requesting background information on this insect. The notes below were extracted from foreign literature.

Cotton Stem Moth (Platyedra vilella) has been recorded from southern Russia, Iran, Iraq, Asia Minor, France, and Morocco.

The principal food plants of this insect are wild Malvaceae: Althaea officinalis, A. nudiflora, Lavatera arborea, L. trimestris, and Malva sylvestris. Cotton has been attacked in southern Russia, Iran, Iraq, and Morocco.

Life history studies were carried on in Uzbekistan (Uzbek, southern Russia) in 1926-28. It was found that there are at least two generations a year: the first develops entirely on Althaea officinalis and the second on cotton. In spring adults are flying the second half of April or earlier and eggs are laid on the tips of Althaea. The young larvae feed for a short time on the tips of the leaves, then mine in the stems. Capsules are seldom attacked. Adults of the second generation are in flight at the beginning of the flowering period of April-planted cotton and deposit eggs on this plant. The behavior of larvae on cotton is similar to that on Althaea. Infested plants become dwarfed and spread horizontally. Infestation on cotton was observed only in the vicinity of Althaea.

Cotton stem moth caused serious damage to cotton in Persia (Iran) in 1932. In 1933 life history studies were conducted. Adults appeared in March and there were 5 generations during the year, the life cycle being completed in 26-40 days. Although wild Malvaceae and cotton were attacked, the first generation was confined to wild plants. On cotton, larvae fed chiefly on the fruit-bearing organs, but occasionally attacked the young stems. Oviposition began on the second day after emergence and lasted an average of 10 days. Young larvae gnawed into the bolls and fed on the seeds. As many as 8 young larvae were found in a boll, but the older larvae tended to occur singly. It was found that when the larvae mature they abandon the bolls and usually pupate in the soil, but occasionally pupation occurs on the soil surface under shelter or in the stem or bolls of the cotton plant. In the insectary eggs were laid on the bolls, usually singly, but sometimes up to 8 eggs were observed on bolls in the field, probably deposited by several females. The number of eggs laid by one female varied from 18 to 272, but was usually about 120.

This insect was found on cotton in Morocco in 1929. The population was abundant on the wild plant, *Malva sylvestris* and attacked cotton in adjacent fields. Larvae fed on ovaries, flower buds and capsules of cotton. *P. vilella* normally feeds on hollyhock in Iraq, but has been taken on cotton.

Control (as practiced in Uzbekistan, Russia): Cotton should be planted as early in spring as possible in order that the crop may be well advanced when adults of the second generation appear.

Pink Bollworm Situation in Southern Texas: A. J. Chapman, Brownsville, Texas reported the emergence of 61 pink bollworm (*Pectinophora gossypiella*) moths during the first three weeks of January from 86,000 seed pods of the wild malvaceous plant, *Pseudabutilon lozani* collected during the fall in Calhoun, Cameron, Nueces, and Refugio Counties and 12,000 seed pods of *Hibiscus lasiocarpus* collected in Calhoun County. Chapman also reported that inspections of 400 bolls collected from the soil surface in Cameron County disclosed the presence of 7 live pink bollworms while a year ago in January 1952 40 live pink bollworms were found in 435 bolls.

Almost 100 percent of the old cotton stalks were destroyed in this county by August 31 in 1952, while in 1951, principally because of weather conditions, it was not possible to "clean-up" the old stalks until the fall months. (R. W. Harned).

SUMMARY OF INSECT CONDITIONS - 1952

SOUTH DAKOTA

Reported by H. C. Severin
and J. A. Lofgren

Cereal and Forage Insects: EUROPEAN CORN BORER (Pyrausta nubilalis) caused severe losses, especially in early-planted fields. Corn planted by May 1 was infested with as many as 12 borers per plant. Average number of borers per 100 plants at time of the fall survey was 194. This represents the infestation in counties east of the Missouri River. GRASSHOPPERS-Range species, in general, decreased to a point where they were not a serious problem. Following species gave trouble in crop land: Melanoplus femur-rubrum, M. bivittatus, M. differentialis, and M. mexicanus. As anticipated, M. femur-rubrum caused some damage to alfalfa in northeastern counties. M. differentialis and M. bivittatus caused some damage to wheat and alfalfa in Sully, Hughes, Lyman and Jones Counties in central South Dakota. There was an increase in the total acreage treated for grasshopper control over 1951 even though the forecast of infestatation was lower for 1952 than for 1951. Approximately 70,000 acres were treated by ground equipment or by airplane with excellent results. CUTWORMS were destructive over much of the State during spring. Period of injury was extended due to prolonged cool weather following an early-spring warm period. Corn, small grains, flax, and garden crops were attacked. WIREWORMS caused damage to small grains, corn and potatoes in many areas. WHEAT STEM MAGGOT (Meromyza americana) was extremely abundant in wheat and barley; damage as high as 10 or 12 percent in some fields. GREENBUG (Toxoptera graminum) gave no trouble during the past year. Only a very few specimens found. The last important occurrence of greenbug in South Dakota was in 1949. A PLANT BUG, Labops sp., which normally feeds on wheatgrasses, invaded wheat and other small grains in Pennington, Jackson and Bennett Counties in southwestern areas. Damage was usually restricted to edges of fields. CLAY COLORED BILLBUG (Calendra aequalis) occurred in outbreak numbers in a slough area of Brown County and caused considerable damage to rye, barley, and wheat. PAINTED-LADY (Vanessa cardui) was unusally abundant in all sections of the State in 1952. Caterpillars fed chiefly on Canada thistle and low mallow, but occasionally damaged soybeans in eastern counties. The principal CORN ROOTWORMS (Diabrotica spp.) in 1952 were the northern species; however, western corn rootworm is increasing in abundance and working eastward. Southern corn rootworm is the least important of the three in South Dakota. COMMON STALK BORERS continued to be important pests of corn, especially along the edges of fields.

Also occurred in gardens, especially where weeds were not controlled.

Principal insects harmful to alfalfa hay and seed production were LYGUS BUGS and other plant bugs, FLEA BEETLES, PEA APHID, GRASSHOPPERS, and SEED CHALCIDS. FALSE CHINCH BUG (*Nysius ericae*) appeared in large numbers in localized areas, especially in alfalfa, causing reduction of hay yields. This insect usually becomes troublesome when drought conditions prevail. SWEETCLOVER WEEVIL (*Sitona cylindricollis*) continued to be an important pest to the farmer who is trying to establish a stand of sweetclover. This insect occurs over the entire State.

Vegetable Insects: Principal insects attacking potatoes in South Dakota during 1952 were COLORADO POTATO BEETLE, POTATO LEAFHOPPERS, FLEA BEETLES and POTATO PSYLLID. CUTWORMS and FLEA BEETLES were the most important insects attacking sugar beets. Extensive control operations were undertaken by growers with excellent results. CABBAGE MAGGOT (*Hylemya brassicae*) was unusually abundant and destructive. Damage continued over a long period due to cool weather.

Insects Affecting Fruit, Shade Trees and Ornamentals: Several species of MITES and APHIDS occurred in very large numbers on ornamentals, shrubs, shade trees and garden crops. Drought conditions no doubt favored the increase of many of these pests. COTTONY MAPLE SCALE (*Pulvinaria vitis*) was especially abundant in eastern counties on many broad-leaved trees and certain vines. OYSTER SHELL SCALE (*Lepidosaphes ulmi*), PINE NEEDLE SCALE (*Phenacaspis pinifoliae*), and EUROPEAN ELM SCALE (*Gossyparia spuria*) were troublesome in many sections of the State. SPRING CANKERWORM (*Paleacrita vernata*) was damaging in southern counties especially to elms. PLUM CURCULIO (*Conotrachelus nenuphar*) was, as usual, highly injurious to plums and apples. APPLE MAGGOT (*Rhagoletis pomonella*) was damaging along the eastern edge of the State. APHIDS of several species were very abundant on plums. PLUM GOUGER (*Anthonomus scutellaris*) caused limited injury in central counties.

Insects Affecting Man and Animals: SCREW-WORM (*Callitroga americana*) was again located in several counties in 1952, but, having been brought into the State in Ocotber, there was not time for development of an outbreak. Many cases of infestations by secondary maggots occurred in livestock in several counties. Infestations of CATTLE GRUBS (*Hypoderma* spp.) were about normal, averaging around thirty per head in yearlings. Both species occur in the State. Sheep ticks, lice, house flies, stable flies and horn flies caused the average amount of annoyance and lossed to livestock. Buffalo gnats, or black flies, were very abundant and annoying in the spring and early summer. Mosquitoes were troublesome in the spring but abated in most sections when drought conditions developed.

GEORGIA

Compiled by C. R. Jordan, C. M. Beckham, Minter Dupree, and L. W. Morgan

Cereal and Forage Insects: FALL ARMYWORM (Laphygma frugiperda) caused heavy damage to pasture grasses in many areas. HESSIAN FLY (Phytophaga destructor) was observed on early-planted wheat in Spalding County. Light to moderate infestations of AMERICAN GRASSHOPPER (Schistocerca americana) occurred in lespedeza fields.

Corn Insects: The severe drought reduced the corn crop to such an extent that damage by CORN EARWORM (Heliothis armigera) was light. Moderate to heavy infestations of AMERICAN GRASSHOPPER occurred in some fields in localized areas. FALL ARMYWORM was damaging to late corn. CHINCH BUGS (Blissus leucopterus) were injurious to corn in localized areas in Jackson, Banks, Oglethorpe, Gwinnett, Madison and Wilkes counties.

Lawn Insects: FALL ARMYWORM caused considerable damage to lawn grasses in residential areas. A CHINCH BUG (Blissus leucopterus subsp. insularis) was a serious pest of St. Augustine grass in Spalding County. A GROUND PEARL (Margarodes meridionalis) damaged centipede grass in South Georgia.

Peanut Insects: FALL ARMYWORM infestations were widespread and severe. CORN EARWORM caused some damage to peanuts. The VELVET BEAN CATERPILLAR (Anticarsia gemmatilis) was reported as serious in localized areas, but was not as widespread as usual. Considerable damage was done by the LESSER CORNSTALK BORER (Elasmopalpus lignosellus). RED-NECKED PEANUTWORM (Stegasta bosquella) was reported causing damage in several areas. LEAFHOPPERS apparently were not serious. THREE CORNERED ALFALFA HOPPER (Spissistilus festinus) was observed girdling the stems of peanuts.

Peach Insects: PLUM CURCULIO (Conotrachelus nenuphar) infestation during the spring and early summer was not heavier than that of an average year until the last week in June when many small "worms" began to show up in harvested peaches from some orchards. Hot, dry, weather in July and August reduced the infestation so that post-harvest applications of insecticides were not necessary. PEACH TREE BORER (*Sanninoidea exitiosa*) infestations were of average intensity by fall. LESSER PEACH TREE BORER (*Synanthedon pictipes*) infestations were heavier than those of an average year. A heavy infestation of SAN JOSE SCALE (*Aspidiotus perniciosus*) and FORBES SCALE (*Aspidiotus forbesi*) was found in an orchard near Fort Valley. WHITE PEACH SCALE (*Pseudaulacaspis pentagona*) was noted in several orchards. ORIENTAL FRUIT MOTH (*Grapholitha molesta*) damage was heavier than usual, due at least in part to the lateness of the crop. FULLER ROSE BEETLE (*Pantomorus godmani*) adults were jarred from peach trees on January 2 and 3, 1952, which was the earliest appearance from hibernation on record. SPOTTED CUCUMBER BEETLES (*Diabrotica undecimpunctata howardi*) were found on Hawaiian varieties of peach trees on January 4, 1952. EASTERN TENT CATERPILLAR (*Malacosoma americanum*) seemed to be more abundant this year than usual. A heavy infestation of the RUSTY PLUM APHID (*Hysteroneura setariae*) was found on scattered trees in an orchard near Waynesboro. (Condensed from a comprehensive report by O. I. Snapp).

Pecan Insects: PECAN WEEVIL (*Curculio caryae*) infested 73 percent of the Stuart pecans in a Spalding County orchard. This insect was injurious to pecans throughout its natural range in central and north Georgia. HICKORY SHUCKWORM (*Laspeyresia caryana*) continues to be a serious pest of pecans. WALNUT CATERPILLAR (*Datana integerrima*) was more common on pecan than usual. The OAK PRUNER (*Hypermallus villosus*) was reported attacking pecans in Talbot County. Infestations of FALL WEBWORM (*Hyphantria cunea*) were noted but were less serious than those of an average year. PECAN CATOCALA (*Catocala viduata*) caused noticeable but not serious damage to pecans at Fort Valley. A SPIDER MITE (*Tetranychus hicoriae*) inflicted noticeable leaf scorch on pecans at Albany, Georgia.

Garden and Truck Crop Insects: Light to moderate infestatons of MEXICAN BEAN BEETLE (*Epilachna varivestis*) occurred on beans. CABBAGEWORMS, APHIDS and HARLEQUIN BUG damage to turnips and collards was normal. VEGETABLE WEEVIL (*Listroderes costirostris obliquus*) continued to be a pest of turnips. STRIPED CUCUMBER BEETLE (*Acalymma vittata*) caused damage to seedling cucumbers and cantaloupes in the Piedmont area. Records in Spalding County showed PICKLEWORM (*Diaphania nitidalis*) infested various cucurbits as follows: summer squash 44 percent, cucumber 10 percent, and cantaloupe 19 percent. The infestation of this insect in late squash was 26 percent. A heavy infestation of POTATO APHID (*Macrosiphum solanifolii*) was present in some late squash. SQUASH BUG (*Anasa tristis*) was moderately abundant on squash during the season. COWPEA CURCULIO (*Chalcodermus aeneus*) caused as high as 80 percent pod infestation of field peas. LESSER CORNSTALK BORER (*Elasmopalpus lignosellus*) damaged cowpeas in several areas of the State. In Spalding County CORN EARWORM (*Heliothis armigera*) infestation of sweetcorn ranged from 68 to 88 percent. Damaging infestations of this insect also occurred on tomato, okra, lima beans, and field peas. A CORN SAP BEETLE, identified as *Carpophilus lugubris*, was found to be a primary feeder of sweetcorn. Heavy infestations of FALL ARMYWORM (*Laphygma frugiperda*) were observed on late sweetcorn. MARGINED BLISTER BEETLE (*Epicauta pestifera*) and the STRIPED BLISTER BEETLE (*Epicauta vittata*) occurred in damaging numbers on tomato, potato, and eggplant.

Tobacco Insects: VEGETABLE WEEVIL (*Listroderes costirostris obliquus*) caused considerable damage to tobacco in some areas in the early spring. FLEA BEETLES were not reported as serious. HORNWORM (*Protoparce* spp.) infestations were light. TOBACCO BUDWORM (*Heliothis virescens*) infestations were widespread and serious. The GREEN PEACH APHID (*Myzus persicae*) was apparently kept well under control.

Cotton Insects: BOLL WEEVIL (*Anthonomus grandis*) emerged from hibernation in relatively low numbers. Hot, dry weather during June, July and early August reduced the population throughout the State. The infestation averaged 36.0 percent punctured squares in unpoisoned fields and 13.9 percent in poisoned fields for the season. BOLLWORMS (*Heliothis virescens* and *H. armigera*) caused the usual amount of damage. *H. virescens* was the predominant species in cotton through July. *H. armigera* was a serious pest in many fields in the Piedmont area where cotton put on new growth following August rains. Counts in September showed up to 16 percent squares and bolls injured. THRIPS (*Franklinella fusca* and *Thrips tabaci*) were moderately abundant on seedling cotton in the Piedmont. PALE-STRIPED FLEA BEETLE (*Systena blanda*) and the ELONGATE FLEA BEETLE (*S. elongata*) damaged seedling cotton in some fields in this area. COTTON APHID (*Aphis gossypii*) failed to build up as a major pest. SPIDER MITES were of minor importance except in some south Georgia fields late in the season. Light infestations of the following mites were identified from north Central Georgia:

Tetranychus bimaculatus, Septanychus texazona, and T. multisetis. Noticeable infestations were near the borders of fields. An unusual occurrence was the damage of SEED-CORN MAGGOT (Hylemya cilicrura) to cotton seed in some Piedmont areas.

Ornamental and Shade Tree Insects: COTTONY-CUSHION SCALE (Icerya purchasi) continues to be a pest of boxwood and nandina. Numerous complaints were received concerning TURPENTINE BEETLES (Dendroctonus sp.) attacking pine trees about residences. EASTERN TENT CATERPILLAR (Malacosoma americanum) was abundant on wild cherry and in some instances attacked other trees. Observations indicated that this insect was heavily parasitized. ELM LEAF BEETLE (Galerucella xanthomelaena) caused heavy damage to elms in some areas. BAGWORMS (Thyridopteryx ephemeraeformis) continued to damage arborvitae. FULLER ROSE BEETLE (Pantomorus godmani) caused injury to African daisies and peppers in a greenhouse in Spalding County. A CATERPILLAR (Datana major) damaged azaleas in several localities. A BORER (Oberea myops) was reported from azalea. The ZEBRA CATERPILLAR (Ceramica picta) injured amaryllis in Thomas County.

Insects Affecting Man and Animals: Only a few cases of SCREW-WORM (Callitroga americana) infestations were observed or reported. One case of human infestation was reported from Ocilla. HORN FLY (Siphona irritans) occurred in moderate to heavy numbers. Usual numbers of the STABLE FLY (Stomoxys calcitrans) and HOUSE FLY (Musca domestica) were present. The PHAROAH ANT (Monomorium pharaonis) and the GERMAN COCKROACH (Blattella germanica) were important household pests.

MISSISSIPPI

Reported by R. E. Hutchins

Cereal and Forage Insects: VARIEGATED CUTWORM (Peridroma margaritosa) caused damage to oats in Washington County in March, in the Stoneville district in April. STRIPED GROUND CRICKET (Nemobius fasciatus) was reported in large numbers in pastures in Jackson County in February. Adults of SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) attacked corn plants in Jones County in March, and larvae caused damage to corn plants in Leake and Tippah Counties in May. ARMYWORM (Pseudaletia unipuncta) and the YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) were collected on oats in Washington County in April and in the Stoneville district and Coahoma County on oats and wheat, and on rye grass in Tate County in April and May. Also collected from grass in Forrest County in August. TARNISHED PLANT BUG (Lygus lineolaris) caused damage to oats in April. CHINCH BUGS were feeding on corn in Washington County in May; on lawn grasses in Harrison County, and on Johnson Grass in Noxubee County in August. Damage to corn in Walthall County by SUGARCANE BEETLE (Eutheola rugiceps) was reported in May. GRASSHOPPERS of different species have caused considerable damage. Early in June EASTERN LUBBER GRASSHOPPER (Romalea microptera) caused damage to lawns in Copiah County. Damage to pastures was reported from Forrest and Walthall Counties by Melanoplus mexicanus, and Dissosteira carolina. Control measures were required in the Senatobia District (Species not identified). Large numbers of M. differentialis were observed in Prentiss County in July. Schistocerca americana were feeding on grasses in forests and pastures, as well as nearby corn fields in George and Jackson Counties during July and August. CORN EARWORM (Heliothis armigera) caused damage to corn in Monroe County in June. FALL ARMYWORM (Laphygma frugiperda) caused damage to corn in Clarke County in July, and in Jones County in August. Pasture grasses, lawn grass and Sudan grass were damaged in Bolivar and Jackson Counties in August, and in Jackson and Jones Counties in October. Oats just coming up were severely damaged by small larvae in George, Jackson, and Oktibbeha Counties in October. LESSER CORNSTALK BORER (Elasmopalpus lignosellus) caused damage to oats and Johnson grass in Lincoln and Noxubee Counties about the middle of October.

Alfalfa and vetch were injured in March and April in Washington County and the Stoneville district by VARIEGATED CUTWORM and ARMYWORM ; and some damage was done to vetch in Washington County early in April by the YELLOW-STRIPED ARMYWORM. CLOVER MITE (Bryobia praetiosa) damage clover in Adams, Forrest, Hinds and Scott Counties in April. THREE-STRIPED BLISTER BEETLE (Epicauta lemniscata) also damaged clover in Oktibbeha County in June. Damage to soybeans in the Stoneville district reported in September. A sample of vetch seed from Lee County had been injured by VETCH BRUCHID (Bruchus brachialis), and adults emerged from the seeds in July.

Fruit Insects: Plum trees were injured by EASTERN TENT CATERPILLAR (Malacosoma americanum) in Oktibbeha and Webster Counties, and shade trees were injured in Jones County in early spring. ORIENTAL FRUIT MOTH (Grapholitha molesta) larvae began entering peach fruit in early June in the Aberdeen and Stoneville districts. The regular spray schedule for peach insects was followed.

Vegetable Insects: YELLOW-MARGINED LEAF BEETLE (Microtheca ochroloma) was numberous in gardens in Jackson County in February. Adults of SPOTTED CUCUMBER BEETLE were reported feeding on cabbage, mustard and turnips in Pike and Walthall Counties in February and March. Larvae of a species of Diabrotica caused injury to sprouting bean seed in Harrison County in March and April. Sprouting bean seed were also injured by the SEED-CORN MAGGOT (Hylemya cilicrura) in Attala, Jones and Washington Counties in April. MEXICAN BEAN BEETLE (Epilachna varivestis) caused some damage to beans in Monroe, Oktibbeha and Tate Counties and in the Moss Point District in June, but were absent during the month of August, possibly due to dry weather. VARIEGATED CUTWORM caused some damage to spinach in Washington County in March and to spinach and tomatoes in the Stoneville District in April. Tomato plants were injured by BLACK CUTWORM (Agrotis ypsilon) in Pike County in March. Tomatoes in Monroe County were injured by TOMATO FRUITWORM (Heliothis armigera) in June. SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) was present in small numbers in George and Walthall Counties. FALSE CHINCH BUG (Nysius ericae) caused injury to turnips in Leake County in January; to turnips and mustard in Harrison County in March and heavy damage to turnips in Harrison County in April. VEGETABLE WEEVIL (Listroderes costirostris obliquus) caused damage to turnips in a number of counties during February, March and April. Turnips and mustard in Walthall County were injured by SOUTHERN GREEN STINK BUG (Nezara viridula) in April. Watermelon plants in DeSoto County were injured by the MELON APHID (Aphis gossypii) in August. SPIDER MITES (Tetranychus sp.) caused extensive damage to gardens in Washington County in September.

Cotton Insects: SEED CORN MAGGOT (Hylemya cilicrura) attacked sprouting cotton seed in the central part of the State in April and further north in May. Adults of the VEGETABLE WEEVIL (Listroderes costirostris obliquus) were reported feeding on small plants as plants emerged in many places in the state in May; and adults of SWEETPOTATO LEAF BEETLE (Typophorus viridicyaneus) were collected on small cotton plants in Calhoun County early in June. BOLL WEEVIL (Anthonomus grandis) was rather numerous in cotton fields in June; but hot, dry weather during the remainder of the growing season so reduced the number of weevils present that the number of pounds of insecticide used in 1952 was only 60 percent of the amount used in 1951. Damage by COTTON APHID (Aphis gossypii) was less than usual, partly due to the reduced amount of poison used on the cotton plants.

BOLLWORM eggs were numerous on cotton plants in the Stoneville district on June 13. Small larvae of Heliothis armigera were present on cotton plants in Lowndes and Washington Counties by June 20. Larvae of H. virescens, and H. subflexa were found about the same time and later. COTTON LEAFWORM (Alabama argillacea) was first reported in Harrison County about August 1, in the Stoneville district about August 15 and in other counties of the state about August 22. SPIDER MITES (Tetranychus spp.) began damage to cotton in several sections of the State about the middle of July, and by the middle of August damage was widespread in the "Delta" section due to dry weather. A WHITE FLY (Trialeurodes sp.) heavily infested cotton in Warren County and other sections by August 1.

Shade Tree and Shrub Insects: Oak trees in several sections of the State were injured during the spring and summer by the OAK SCALE (Lecanium quercifex) and OAK KERMES SCALE (Kermes pubescens). BAGWORM (Thyridopteryxephemeraeformis) caused some damage to arborvitae. EUONYMUS SCALE (Unaspis euonymi) damaged euonymus. COTTONY-CUSHION SCALE (Icerya purchasi) caused some damage to Pittosporum in Jackson County.

Forest Insects: SOUTHERN PINE BEETLE (Dendroctonus frontalis) caused extensive damage by killing pine trees over an extensive area in the southwestern part of the State. Cooperative control measures were carried out. Specimens of Ips calligraphus were received from Jones and Scott counties, where they were taken from dying or recently killed pine trees. Early in April FOREST TENT CATERPILLAR (Malacosoma disstria) damaged trees in Greene and Wayne Counties. Infestations of FALL WEBWORM (Hyphantria cunea) were general on forest and pecan trees over the southern part of the State by June 20, and over most of the State soon afterwards, many trees were defoliated. This infestation had subsided by the latter part of July. These insects became numerous again by early September, and by the middle of September were reported to be more abundant than for several years. RED-HEADED PINE SAWFLY (Neodiprion lecontei) was reported to be stripping pine trees in Rankin County about the last of July.

General Insect Pests: IMPORTED FIRE ANT (Solenopsis saevissima richteri) was found for the first time in Wilkinson County in January, 1952. Other counties in which one or more infestations have been found include Harrison, Jackson, Greene, Wayne, George, Forrest, Lauderdale, Lowndes, Noxubee, Oktibbeha and Clay. FIELD CRICKET (Acheta assimilis) was very abundant in towns in the Stoneville district, in some places in the northern part of the state, and in Forrest County, during August. GREEN CLOVERWORM (Plathypena scabra) damaged soybeans in Alcorn, Coahoma, and Quitman Counties in August.

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WYOMING - Additional 1952 summary note: PAINTED-LADY (Vanessa cardui) caused defoliation of Canada thistle in many areas of the State. Main areas of infestation were Park, Big Horn, Platte and Sheridan Counties. (G. B. Harston and H. S. Beaudoin)

SURVEY METHODS

BEET LEAFHOPPER (Circulifer tenellus)

Spring surveys are made annually, generally during April, to determine the abundance and distribution of overwintered beet leafhoppers and their principal wild host plants in representative spring breeding areas in southern Idaho and eastern Oregon. To measure leafhopper abundance, 50 samples are taken at random at 3-mile intervals along the routes traveled where wild host plants occur. The counts are made with the Hills' 1/ square-foot sampler, which traps the insects in a cage. The kind, stand, and condition of wild host plants are recorded. The population is expressed in the number of leafhoppers per sample or per 100 square feet of weed-host area.

Beet leafhopper counts are made in sugar-beet fields with the square-foot sampler. The samples, which include more than one plant in unthinned fields but single plants in thinned fields , are taken at random along the beet rows. Generally, 100 samples are taken in each field - 25 samples in each quarter. The average population of leafhoppers is expressed in the number per sample or per beet plant.

Surveys are made in September to determine the magnitude of fall populations of the beet leafhopper in Russian-thistle areas and the extent and location of such thistle areas in southern Idaho and eastern Oregon. The transect method of recording plant cover is used to determine the acreage of Russian-thistle. Records are kept of miles traveled and the miles of Russian-thistle observed on each side of the road. The approximate number of square miles of Russian-thistle with each area is determined by means of the following formula:

$$\frac{\text{Transect miles of thistle}}{\text{Transect miles}} = \frac{\text{x (thistle area in square miles)}}{\text{Total area in square miles}}$$

Quantitative samples with a 1/2-square-foot sampling fork 2/ is used in

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1/ Hills, O. A. 1933. A new method for collecting samples of insect populations. Jour. Econ. Ent. 26: 906-910.

2/ Lawson, F.R., D.E. Fox, and W.C. Cook. 1941. Three new devices for measuring insect populations. Bur. of Ent. and Plant Quar. ET-183.

determining the population of leafhoppers. Ten fork samples are taken at each stopping point, the number of stops depending upon the area and condition of the Russian-thistle. At each stopping point, the Russian-thistle stand is determined by means of the pacing method. This consists of taking 250 double paces through the host-plant area. The number of living plants touched by the toe of the right foot in moving through an area is counted, and from this figure the percentage stand is calculated, e.g., if there were 125 living plants touched by the toe of the right foot in moving 250 double paces, the stand is 50 percent. The condition and height of the thistle are recorded. From this information, the areas of Russian-thistle are computed and corrected to a 100-percent stand. By using the average density of leafhoppers per unit-area and the acreage of thistle, the approximate number of leafhoppers can be determined. As an example, if Russian-thistle occupied an average of 54 percent of each acre examined and if the thistle plants were infested on an average by 57 beet leafhoppers per square foot of land surface occupied, on this basis there would be approximately 1,340,000 beet leafhoppers per acre. This survey gives the acreage of Russian-thistle and the size of the fall population of leafhoppers in the summer breeding areas. The principal breeding areas of the beet leafhopper in the western states have been located and delimited, and the surveys are confined to these areas.

Information obtained from these surveys, together with other pertinent factors, provides the basis for the issuance of statements on beet leafhopper conditions for southern Idaho to growers and other interested persons or agencies. (J. R. Douglass)

POTATO PSYLLID (Paratrioza cockerelli)

To determine the abundance of potato psyllid populations, adult counts are made in approximately 10 potato fields per county, selected at random and examined at one-to two-week intervals during the growth of the plants.

Potato psyllids are most numerous near the edges and progressively diminish in numbers toward the center of potato fields. Adult counts are made with a 15-inch insect net, of unbleached muslin. Starting at one edge of the field and working toward the center along the rows, fifty sweeps are taken at intervals of about one pace. The net is swept briskly across the tops of the plants, covering approximately two-thirds of the net opening with the tops of the plants. Sampling is continued toward the center of the field, in units of 50 sweeps, until 2 to 4 units of samples are obtained, depending on the size of the field. Counts are recorded in numbers of psyllids per 100 sweeps.

Although survey records are based on adult counts, egg and nymph counts may be made, if desired, by taking 50-leaflet samples at the same location that the adult counts are made. One leaflet is taken from near the center of each of 50 plants. The leaflets are examined in the laboratory under a low magnification lens and the eggs and nymphs are recorded in numbers per 50 leaflets. (R. L. Wallis)